

Claim Amendments

Claim 1 (previously presented): An apparatus for separating undesired material from coal comprising:

an air swept pulverizer for breaking up coal into particles where the pulverizer is a hammer mill, bowl mill, roller mill, or ring/roller mill, the pulverizer includes a feed mechanism which introduces coal into the pulverizer, the pulverizer includes an air blower which introduces flowing air into the pulverizer, the pulverizer includes a removal mechanism which removes undesired material and coal which contains a large portion of undesired material from the pulverizer;

a separation mechanism connected to the pulverizer for separating undesired material from coal at a feed rate of at least 100 pounds per hour, the separation mechanism includes a conveyor which carries undesired material and coal which contains a large portion of undesired material from the removal mechanism;

a mechanism for returning coal from which a portion of the undesired material has been removed by the separation mechanism back to the pulverizer for additional grinding;
and

a mechanism for diversion of material removed from the pulverizer directly to refuse without going to the separation mechanism.

Claim 2 (previously presented): An apparatus as described in Claim 49 wherein the pulverizer includes a feed mechanism which introduces desired and undesired material into the pulverizer.

Claims 3 and 4 (canceled)

Claim 5 (previously presented): An apparatus as described in Claim 2 wherein the separation mechanism includes a conveyor which carries undesired material and coal which contains a large portion of undesired material from the removal mechanism.

Claim 6 (original): An apparatus as described in Claim 5 including a mechanism for returning cleaned coal from the separation mechanism back to the pulverizer for additional grinding.

Claim 7 (original): An apparatus as described in Claim 6 including a mechanism for diversion of material removed from the pulverizer directly to refuse without going to the separation mechanism.

Claim 8 (previously presented): An apparatus as described in Claim 1 wherein the separation mechanism includes a surge bin disposed adjacent the conveyor into which the undesired material and coal which contains a large portion of undesired material is deposited from the conveyor.

Claim 9 (original): An apparatus as described in Claim 8 wherein the pulverizer includes a grinding chamber.

Claim 10 (original): An apparatus as described in Claim 9 wherein the pulverizer includes intermediate openings through which the removal mechanism removes undesired material and coal of an undesired size from the pulverizer.

Claim 11 (original): An apparatus as described in Claim 10 wherein the pulverizer has a complete opening from which coal of a desired particle size leaves the pulverizer.

Claim 12 (original): An apparatus as described in Claim 11 wherein the pulverizer includes a base and the removal mechanism includes a screw conveyor connected to the base.

Claim 13 (original): An apparatus as described in Claim 12 wherein the pulverizer includes a particle size classifier.

Claim 14 (currently amended): An apparatus as described in Claim 13 wherein the ~~[[cone]]~~ particle size classifier includes kick-out door mechanisms through which material can be removed from the ~~[[cone]]~~ particle size classifier.

Claim 15 (original): An apparatus as described in Claim 14 wherein the separation mechanism includes a screen disposed under the surge bin for screening material.

Claim 16 (original): An apparatus as described in Claim 15 wherein the separation mechanism includes a vibrating feeder disposed under the screen on which material is deposited after passing through the screen.

Claim 17 (original): An apparatus as described in Claim 16 including a mechanism for directly rejecting the oversize from the screen or sending back to the pulverizer.

Claim 18 (original): An apparatus as described in Claim 17 wherein the separation mechanism includes an electric and magnetic separator disposed adjacent the vibrating feeder.

Claims 19-27 (canceled)

Claim 28 (previously presented): An apparatus for separating undesired material from desired material of a mixture comprising:

a fluid swept comminutor for breaking up the mixture, the comminutor includes a feed mechanism which introduces the mixture into the comminutor, the comminutor includes a fluid blower which introduces flowing fluid into the comminutor, the comminutor includes a removal mechanism which removes undesired material and desired material from the comminutor;

a separation mechanism connected to the comminutor for separating undesired material from desired material at a feed rate of at least 100 pounds per hour, the separation mechanism includes a conveyor which carries undesired material from the removal mechanism, the separation mechanism includes a surge bin disposed adjacent the conveyor into which the undesired material and desired material is deposited from the conveyor; and

a mechanism for direct rejection of material removed from the comminutor without further processing, the rejection mechanism connected with the comminutor.

Claim 29 (previously presented): An apparatus as described in Claim 51 wherein the comminutor includes a feed mechanism which introduces the mixture into the comminutor.

Claims 30 and 31 (canceled)

Claim 32 (previously presented): An apparatus as described in Claim 29 including a mechanism for direct rejection of material removed from the comminutor without further processing.

Claim 33 (original): An apparatus as described in Claim 32 wherein the separation mechanism includes a conveyor which carries undesired material from the removal mechanism.

Claim 34 (original): An apparatus as described in Claim 33 wherein the separation mechanism includes a surge bin disposed adjacent the conveyor into which the undesired material and desired material is deposited from the conveyor.

Claim 35 (previously presented): An apparatus as described in Claim 28 wherein the comminutor includes a grinding chamber.

Claim 36 (original): An apparatus as described in Claim 35 wherein the comminutor includes intermediate openings through which the removal mechanism removes undesired material and desired material from the comminutor.

Claim 37 (original): An apparatus as described in Claim 36 wherein the comminutor has a complete opening from which particles of a desired particle size leaves the comminutor.

Claim 38 (original): An apparatus as described in Claim 37 wherein the comminutor includes a removal mechanism for separating particles from the lowest elevation in the comminutor.

Claim 39 (original): An apparatus as described in Claim 38 wherein the comminutor includes a particle size classifier.

Claim 40 (original): An apparatus as described in Claim 39 wherein the removal mechanism includes kick-out door mechanisms to remove material around the outside

walls of the classifier at elevations above the grinding chamber but below the feed mechanism's entrance to the classifier.

Claim 41 (original): An apparatus as described in Claim 40 wherein the separation mechanism includes a size classification mechanism disposed under the surge bin for screening material.

Claim 42 (original): An apparatus as described in Claim 41 wherein the separation mechanism includes a vibrating feeder disposed under the screen on which material is deposited after passing through the screen.

Claim 43 (original): An apparatus as described in Claim 42 including a mechanism for directly rejecting oversized material from the screen or sending it back to the pulverizer.

Claim 44 (original): An apparatus as described in Claim 43 wherein the separation mechanism includes an electric and magnetic separator disposed adjacent the vibrating feeder.

Claim 45 (original): An apparatus as described in Claim 44 including a mechanism for returning the desirable material from the separator back to the pulverizer and rejecting the undesirable material, the returning mechanism disposed adjacent the separator and the pulverizer.

Claims 46 and 47 (canceled)

Claim 48 (previously presented): An apparatus for separating undesired material from desired material comprising:

an air swept pulverizer for breaking up the desired material into particles where the pulverizer is a hammer mill, bowl mill, roller mill, or ring/roller mill, the pulverizer includes an air blower which introduces flowing air into the pulverizer;

a separation mechanism which rejects undesirable material removed from the pulverizer and recovers desired material at a feed rate of at least 100 pounds per hour, the separation mechanism separate from the pulverizer; and

a removal mechanism through which undesired material from the pulverizer is brought to the separation mechanism, and connecting the pulverizer with the separation mechanism remote from the pulverizer.

Claim 49 (previously presented): An apparatus as described in Claim 48 including a mechanism for returning the desired material to the pulverizer remaining after separation of the undesired material from the separation mechanism, the returning mechanism connected with the pulverizer and the separation mechanism.

Claim 50 (previously presented): An apparatus for separating undesired material from desired material of a mixture comprising:

a fluid swept comminutor for breaking up the mixture, the comminutor includes a fluid blower which introduces flowing fluid into the comminutor;

a separation mechanism, the separation mechanism separate from the comminutor for separating undesired material from desired material removed from the comminutor at a feed rate of at least 100 pounds per hour; and

a removal mechanism through which undesired material from the comminutor is brought to the separation mechanism and connecting the comminutor with the separation mechanism remote from the comminutor.

Claim 51 (previously presented): An apparatus as described in Claim 50 including a mechanism for returning the desired material to the comminutor remaining after separation of the undesired material from the separation mechanism, the returning mechanism connected with the comminutor and the separation mechanism.

Claim 52 (previously presented): An apparatus as described in Claim 51 wherein the separation mechanism includes means for discarding the undesired material separated from the desired material in the separation mechanism.

Claim 53 (previously presented): An apparatus for separating undesirable material from coal comprising:

an air swept pulverizer for breaking up coal into particles where the pulverizer is a hammer mill, bowl mill, roller mill, or ring/roller mill, the pulverizer having entry ports passing through the walls of the air swept pulverizer placed at various elevations around the circumference of the pulverizer, with ports at the lowest elevation inside of the working

volume of the pulverizer for accessing hard particles of greatest weight while ports at elevations above the lowest receive hard particles of lower weight;

a separation mechanism separate from the pulverizer which rejects undesirable material removed from the pulverizer and recovers desirable material at a feed rate of at least 100 pounds per hour; and

a removal mechanism connecting the pulverizer through the entry ports to a separation mechanism located outside of the pulverizer, through which material from the pulverizer is brought to the separation mechanism.

Claim 54 (previously presented): An apparatus as described in Claim 53 wherein the pulverizer includes a feed mechanism which introduces desired and undesired material into the pulverizer.

Claim 55 (previously presented): An apparatus as described in Claim 54 including a mechanism for returning the desirable material to the pulverizer remaining after separation of the undesirable material from the separation mechanism, the returning mechanism connected with the pulverizer and the separation mechanism.

Claim 56 (previously presented): An apparatus as described in Claim 55 including means for direct rejection of undesired material removed from the pulverizer, in connection with the pulverizer; and means for rejection and physical separation from the separation mechanism of material separated in the separation mechanism, in contact with the separation mechanism.